

WHAT IS CLAIMED IS:

1. A method of directing cells to a damaged or diseased tissue or organ in an individual, comprising the steps of:
 - providing a tagged cell, wherein said cells are tagged with a target cell binding member; and
 - introducing the tagged cell into the vasculature of said individual, thereby directing said cells to said damaged or diseased tissue or organ.
2. The method of claim 1, wherein said cells are stem cells.
3. The method of claim 2, wherein said stem cells are selected from the group consisting of mesenchymal stem cells (MSCs), and endothelial progenitor stem cells.
4. The method of claim 1, wherein said cells are autologous, allogeneic, or xenogeneic relative to said individual.
5. The method of claim 1, wherein said target cell binding member is selected from the group consisting of annexin, an antibody having specific binding affinity for cardiac-specific troponin T, an antibody having specific binding affinity for cardiac-specific troponin I, an antibody having specific binding affinity for skeletal muscle-specific troponin T, an antibody having specific binding affinity for skeletal muscle-specific troponin I, and an antibody having specific binding affinity for myosin.
6. The method of claim 1, wherein said introducing is via a coronary vein, a peripheral vein, or a coronary artery of said individual.
7. The method of claim 1, wherein-said damaged tissue or organ is selected from the group consisting of myocardial, pericardial, pancreatic, kidney, skeletal muscle, central nervous system, and liver.

8. The method of claim 1, wherein said tagged cells further comprise an imaging agent.

5 9. The method of claim 8, wherein said imaging agent is selected from the group consisting of monocristalline iron oxide nanoparticle (MION), superparamagnetic iron oxide particles (SPIO), and ultra small superparamagnetic iron oxide (USPIO).

10 10. The method of claim 8, wherein said imaging agent is used for imaging said tagged cells.

11. A method of delivering stem cells to a myocardial infarction in an individual, comprising the steps of:

15 providing tagged stem cells, wherein said stem cells are tagged with annexin; and

introducing the tagged stem cell into the vasculature of said individual, thereby delivering said stem cells to said myocardial infarction.

20 12. The method of claim 11, wherein said stem cells are selected from the group consisting of MSCs and EPCs.

13. A composition comprising:
at least one linker moiety; and
at least one target cell binding member.

25 14. The composition of claim 13, wherein said target cell binding member is
30 selected from the group consisting of annexin, an antibody having specific binding affinity for cardiac-specific troponin T, an antibody having specific binding affinity for cardiac-specific troponin I, an antibody having specific binding affinity for skeletal
30 muscle-specific troponin T, an antibody having specific binding affinity for skeletal muscle-specific troponin I, and an antibody having specific binding affinity for myosin.

15. The composition of claim 13, further comprising an imaging agent.
16. The composition of claim 15, wherein said imaging agent is selected from
5 the group consisting of MION, SPIO, and USPIO.
17. An article of manufacture, comprising the composition of claim 13, and
instructions for tagging cells with said target cell binding member using said linker,
wherein said cells are stem cells harvested from an individual.
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18. The article of manufacture of claim 17, further comprising instructions for
performing an autologous transplant on said individual with said cells after said tagging.
19. Isolated stem cells, wherein said stem cells are tagged with a heterologous
15 target cell binding member.
20. The stem cells of claim 19, wherein said stem cells are further labeled with
an imaging agent.